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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/582,982	07/10/2000	KATSUNORI ITOU	49657-742	4615

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EXAMINER

WILKINS III, HARRY D

ART UNIT	PAPER NUMBER
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1742

DATE MAILED: 01/09/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

MF-9

Office Action Summary

Application No.

09/582,982

Applicant(s)

ITOU ET AL.

Examiner

Harry D Wilkins, III

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 November 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 2 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 2 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

1. Claims 1 and 2 are pending. Claim 1 has been amended.
2. The objection to claim 2 on the Office Action Summary was made in error and is hereby withdrawn.
3. The rejection under 35 USC 103 based on the Nakamura et al and Takata et al references has been withdrawn.
4. The rejection under 35 USC 103 based on the Takata et al and Ochi et al references has been withdrawn.
5. The new grounds of rejection are as follows.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1-2 are rejected under 35 U.S.C. 103(a) as obvious over Nakamura et al (JP 02-054739 A) in view of Applicant's admission of prior art.

Nakamura et al teach (see English abstract) a bearing steel which contains, by weight, 0.45 to 0.7% C, 0.10 to 2.0% Si, 0.20 to 2.0% Mn, less than 0.015% P, less than 0.015% S, less than 2.0% Cr, less than 2.0% Ni, 0.015 to 0.060% Al, less than 0.002% Ti, less than 0.0015% O, 0.003 to 0.020% N and the balance iron. The ranges of elements taught by Nakamura et al overlap the presently claimed ranges for all of the elements.

The claim is directed to a "part" of an antifriction bearing having an inner ring, an outer ring and a rolling element. Nakamura et al do not expressly teach that the steel is used as a part of an antifriction bearing, however, the bearing steel of Nakamura et al would have been expected by one of ordinary skill in the art to be used to make a part of an antifriction bearing.

The claim states "having a structure subjected to tempering after quench hardening or carbonitriding, wherein the hardness after said tempering is at least HRC 58 when tempered at a temperature in a range of 180°C to 350°C and the maximum carbide size is not more than 8 μm ". Nakamura et al do not expressly teach that the bearing steel is tempered after quench hardening or carbonitriding. However, Applicant admits as prior art (see page 2, lines 7-12) that it was well known in the art to perform a high temperature tempering (300°C) on a bearing steel that has been quench hardened or carbonitrided in order to attain dimensional stability. Therefore, it would have been obvious to one of ordinary skill in the art to have applied the conventional processing step of tempering after quench hardening or carbonitriding as disclosed by Applicant's admission of prior art to the bearing steel of Nakamura et al because tempering aids the bearing in dimensional stability. With respect to the properties of hardness and carbide size, the alloy composition taught by Nakamura et al in view of Applicant's admission of prior art overlaps the alloy composition recited in the claims and is processed by an identical process of tempering, therefore, one of ordinary skill in the art would have expected that the products taught by the reference would have the same hardness and carbide size as claimed.

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"Where the claimed and prior art products are identical or substantially identical in structure or composition or are produced by identical or substantially identical processes, a prima facie case of either anticipation or obviousness has been established, In re Best 195 USPQ 430, 433 (CCPA 1977). 'When the PTO shows a sound basis for believing that the products of the applicant and the prior art are the same, the applicant has the burden of showing they are not.' In re Spada, 15 USPQ2d 1655, 168 (Fed. Cir. 1990). Therefore, the prima facie case can be rebutted by evidence showing that the prior art products do not necessarily possess the characteristics of the claimed product. In re Best 195 USPQ 430, 433 (CCPA 1977)." See MPEP 2112.01

Regarding claim 2, Nakamura et al teach (see English abstract) that the bearing steel may optionally contain 0.01 to 0.30% V or less than 1.0% Mo.

5. Claims 1-2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takata et al (US 4,642,219) in view of Ochi et al (US 5,705,124) and Applicant's admission of prior art.

Takata et al teach (see abstract) a bearing steel which contains, by weight, 0.7 to 1.1% C, 0.15 to 1.6% Si, 0.15 to 1.15% Mn, less than 0.010% P, less than 0.002% S, 0.5 to 1.6% Cr, less than 0.015% Al, less than 0.0015% Ti, less than 0.0006% O, less than 0.005% N and the balance iron.

Takata et al do not teach that the bearing steel contains 0.1 to 3.0% Ni.

Ochi et al teaches a bearing steel that is similar in composition to the bearing steel of Takata et al. Ochi et al teach (see col 5, lines 14-23) that Ni can be added at 0.1 to 2.0% to bearing steels for the purpose of improving the hardenability and extending the life of the bearing steel.

Therefore, it would have been obvious to one of ordinary skill in the art to have added Ni as taught by Ochi et al to the bearing steel of Takata et al because Ochi et al teach that Ni improves hardenability and extends the life of bearing steels.

The claim is directed to a "part" of an antifriction bearing having an inner ring, an outer ring and a rolling element. Takata et al in view of Ochi et al do not expressly teach that the steel is used as a part of an antifriction bearing, however, the bearing steel of Takata et al in view of Ochi et al would have been expected by one of ordinary skill in the art to be used to make a part of an antifriction bearing.

Takata et al teach (see col 5, lines 3-9) that the bearing steel is quench hardened and then tempered at 170°C. Thus, Takata et al do not teach that the bearing is tempered at 180 to 350°C. However, Applicant admits as prior art (see page 2, lines 7-12) that it was well known in the art to perform a high temperature tempering (300°C) on a bearing steel that has been quench hardened or carbonitrided in order to attain dimensional stability. Therefore, it would have been obvious to one of ordinary skill in the art to have applied the conventional processing step of tempering after quench hardening or carbonitriding to the bearing steel of Takata et al in view of Ochi et al because tempering aids the bearing in dimensional stability.

The claim states "having a structure subjected to tempering after quench hardening or carbonitriding, wherein the hardness after said tempering is at least HRC 58 when tempered at a temperature in a range of 180°C to 350°C and the maximum carbide size is not more than 8 μm ". Takata et al teach (see Table 2) that the non-metallic inclusions (i.e.-oxides, nitrides, carbides) have average length of 1.0 μm for the inventive examples. With respect to the property of hardness, the alloy composition taught by Takata et al in view of Ochi et al overlaps the alloy composition recited in the claims and the processing method of Takata et al in view of Applicant's admission of

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prior art is identical to the process recited in the claims, and, therefore, one of ordinary skill in the art would have expected that the products taught by the references would have the same hardness as claimed.

Regarding claim 2, Takata et al teach (see abstract) optionally adding 0.05 to 0.50% Mo and 0.05 to 0.30% V.

Response to Arguments

8. Applicant's arguments with respect to claims 1-2 have been considered but are moot in view of the new ground(s) of rejection. However, the Examiner would like to point out that at Takata et al discloses use of the bearing at high temperature. Takata et al teach (see col 1, lines 12-19) that bearings are used in industrial machinery and vehicles. Applicant discloses (see page 2, lines 3-4) that bearings used for an automobile or aircraft are used under high-temperature environment. Thus, in disclosing that the bearings are used for "vehicles" (which may include automobiles and aircraft), Takata et al disclose bearings for high temperature use.

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Harry D Wilkins, III whose telephone number is 703-305-9927. The examiner can normally be reached on M-F 7:30am-4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy V King can be reached on 703-308-1146. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

Harry D Wilkins, III
Examiner
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hdw
January 8, 2002


ROY KING
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700